bio-protocol Preprint

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LION formulation of the repRNA vaccine

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An abbreviated version of this protocol was published in Science Translational Medicine in Aug 2020

An Alphavirus-derived replicon RNA vaccine induces SARS-CoV-2 neutralizing antibody and T cell responses in mice and nonhuman primates

DOI: 10.1126/scitranslmed.abc9396

Detailed protocol

LION and repRNA are combined at a nitrogen:phosphate molar ratio of 15, where the nitrogens are present in the DOTAP component of LION and phosphates are present in the ribonucleotide components of the repRNA. The molar mass of DOTAP is ~663 g/mol and that of ribonucleotides is ~330g/mol.

1. Dilute repRNA in RNAse-free water to the desired concentration/dose
2. Using the molar masses specified above and the final concentration/dose of repRNA, dilute LION in a sucrose and sodium citrate buffer, using RNAse-free water, such that the final concentration of sucrose is 10% w/v and sodium citrate is 10mM.
3. Add the diluted RNA to the diluted LION formulation and pipette gently to mix. Keep on ice before use.

How to cite:（Readers should cite both the Bio-protocol preprint and the original research article where this protocol was used）

1. Erasmus, J. H.(2020). LION formulation of the repRNA vaccine. Bio-protocol Preprint. bio-protocol.org/prep642.
2. Erasmus, J. H., Khhar, A. P., O'Connor, M. A., Walls, A. C., Hemann, E. A., Murapa, P., Archer, J., Leventhal, S., Fuller, J. T., Lewis, T. B., Draves, K. E., Rall, S., Guerriero, K. A., Duthie, M. S., Carter, D., Reed, S. G., Hawman, D. W., Feldmann, H., Jr., M. G., Veesler, D., Berglund, P. and Fuller, D. H.(2020). An Alphavirus-derived replicon RNA vaccine induces SARS-CoV-2 neutralizing antibody and T cell responses in mice and nonhuman primates . Science Translational Medicine 12(555). DOI: 10.1126/scitranslmed.abc9396

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